REMARKS

Reconsideration and allowance of this application are respectfully requested. Claims 1-14, 17-25, 27-34, and 36-44 remain pending. By this communication, claim 24 is amended.

Rejection Under 35 U.S.C. §101

Claims 24, 25, 27-34, and 36-44 were rejected under 35 U.S.C. §101 because the claimed invention is allegedly directed to non-statutory subject matter. In particular, the Office asserts that the claims neither (1) are tied to another statutory category (such as a particular apparatus), nor (2) transform underlying subject matter to a different state or thing. Further, the Office asserts that the process of claim 24 provides no tangible result.

With respect to prong (2) of the above, the Federal Circuit stated that the transformation of data that represents a physical object or substance also meets the test; the claim is not required to involve any transformation of the underlying physical object that the data represents. In re Bilski, 545 F.3d at 943, 963 (Fed.Cir. 2008).

The biomedical signal measurements that are the subject of claims 24-25, 27-34, and 36-44 (Claim 24 being the only independent claim) are not abstract concepts. Rather, they are physical measurements (e.g., emotional state index and level) that can be reproduced or displayed, e.g., via a display unit of a mobile device. In the context of independent claim 24, the data (e.g., biomedical signal data) pertaining to the biomedical signal measurements is transformed to calculated physical measurements, via calculations of extracted feature values and predetermined feature values. Since the claim clearly recites that it is biomedical signal data (or information) that is being transformed, and this biomedical signal data represents physical measurements, it is limited to a particular physical application, and therefore meets the requirements for patent-eligible subject matter under 35 U.S.C. 101, according to the standard set forth by the Federal Circuit.

Further, Applicants have amended independent claim 24 to recite, *inter alia*, "[a] health care method for performing biomedical signal measurement, the method being executed in a mobile device." It is Applicants' contention that the afore-mentioned amendment also satisfies the first prong of the *Bilski* test (i.e., claimed process tied to a particular machine or apparatus).

Accordingly, Applicants respectfully request that the rejection of claims 24, 25, 27-34, and 36-44 under 35 U.S.C. §101 be withdrawn.

Rejection Under 35 U.S.C. §112

Claims 1 and 17-22 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. In particular, the Office states that it is unclear if the modules and units recited in these claims are software or algorithms, or if the modules comprise structure.

Applicants submit that the modules and units recited in the instant application are system components and are not software or algorithms alone. It is Applicants' contention that the modules and units may include software or algorithms for processing and/or calculation of biomedical signal data, for example. But, software alone or by itself cannot perform any function. The software has to be executed or compiled by a computer. Once software is compiled, the processor is uniquely configured to carry out the functions defined by the compiled software in the hardware. Thereafter, the computer is a device that is specifically configured to carry out the function. Hence, these modules and units are physical. Further, some of the modules and/or units are clearly not compiled software, but must have physical interfaces.

Applicants contend further that the recited modules are provided with structure. For example, claim 1 recites "***a biomedical signal measurement module that detects biomedical signals from a user's body***, ...; and a ***health care module that analyzes an emotional state and physical condition of the user*** ..., ***the health care module comprising***: an emotional state analysis unit, ***including a feature analysis unit that extracts feature values*** of the classified biomedical signals ..., ***a subtracter unit that obtains differences between the extracted feature values*** from the feature analysis unit and predetermined feature values, and a ***support vector machine (SVM) unit that classifies the user's emotional state*** by respective emotions in accordance with the differences of the feature values ..., and a ***physical condition analysis unit that analyzes the user's physical condition*** based on the classified biomedical signals input from the biomedical signal measurement module and the user's physical information."

Thus, Applicants submit that the recited modules and/or units in claims 1 and 17-22 are provided with structure in accordance with 35 U.S.C. §112, second paragraph. Accordingly, withdrawal of the rejection to claims 1 and 17-22 under 35 U.S.C. §112 is respectfully requested.

Rejections Under 35 U.S.C. §103

Claims 1-11, 13-14, 17-25, 27-34, and 37-44 - Teller/Tato

Claims 1-11, 13-14, 17-25, 27-34, and 37-44 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over *Teller et al.* (U.S. Patent No. 7,261,690, hereinafter *Teller*) in view of *Tato et al.* (U.S. Patent Publication No. 2003/0069728, hereinafter *Tato*).

The Office acknowledges that *Teller* fails to disclose a support vector machine for classifying the emotional state of a user. However, the Office cites *Tato* as teaching this afore-mentioned feature and asserts that the combination of *Teller* and *Tato* would be obvious (*See* Office Action, pgs. 6-7). Applicants respectfully disagree.

Tato discloses a method for detecting emotions from speech input. Referring to Figure 2 of *Tato*, in step S11 within a first feature class A of prosodic features, the prosodic features or parameters thereof are generated and extracted from the speech input SI. The prosodic features may comprise pitch, pitch range, loudness, speaking rate, and/or similar features. In step S12, from the prosodic features, feature vectors are constructed and mapped onto the activation/arousal subspace according to the first feature class A to classify a passive or active state of the current speaker. For the classification of the current emotional state (CES) of the speaker within the activation/arousal subspace, the classifier CA of comparative low complexity determines the degree of arousal/activation A. *Tato*, pg. 3, paragraphs [0045] - [0047].

On the other hand, in step S21, features of a second feature class E, which belong to a set of voice and/or speech quality features, are generated. These quality features may include spectral tilt, amplitude difference between harmonics and formants, formants bandwidth, jitter, harmonic-to-noise-ratio, and/or similar features.

In step S22, from these features, feature vectors are constructed and then mapped into the subspace or evaluation/pleasure dimension according to the second feature class E to classify a current speaker as speaking negative or positive. For the classification of the emotional state CES of the speaker, in the evaluation/pleasure subspace, the classifier CE of relative high complexity determines the degree of the evaluation/pleasure E. *Tato*, pg. 3, paragraphs [0048] - [0049].

The results of the classification schemes of steps S12 and S22 may be merged and fused by an evaluation process being performed by a final classification algorithm in step S30. In step S40, a current emotional state CES of the current speaker is detected and/or output as a result of the method. *Tato*, pg. 4, paragraphs [0050] - [0051].

As discussed above, *Tato* discloses extracting features and/or parameters from speech input, and deriving the current emotional state of the speaker from the extracted features and/or parameters. First and second feature classes are associated with dimensions of a given emotional space. Nowhere in *Tato* is there disclosed the concept of comparing and obtaining the differences between the extracted feature and/or parameter values with predetermined feature and/or parameter values. Rather, feature vectors are constructed and mapped onto the activation/arousal subspace and the evaluation/pleasure subspace (*See* Figure 1 of *Tato*).

Accordingly, *Tato* does not disclose at least "a support vector machine (SVM) unit that classifies the user's emotional state by respective emotions ***in accordance with the differences of the feature values obtained*** by the subtracter unit" as recited in independent claim 1, and as similarly recited in independent claim 24.

Moreover, *Tato* uses voice ("speech") to detect emotions, whereas, in the instant application, biomedical signals are used to detect the emotional state of a user. For rejections under 35 U.S.C. § 103(a) based upon a combination of prior art elements, in KSR Int'l v. Teleflex Inc., 127 S.Ct. 1727, 1741, 82 USPQ2d 1385, 1396 (2007), the Supreme Court stated that "a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art." "Rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some **articulated reasoning with some rational underpinning** to support the legal conclusion of obviousness." In re Kahn, 441 F.3d 977, 988, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006) (emphasis added). In the present case, the Office has not established any nexus between using "voice" to detect emotions on one hand, and using physiological signals to detect a user's physiological state on the other hand, that would lead a person of ordinary skill to make the purported modification of *Teller*.

Therefore, *Teller* or *Tato*, alone or in combination, fails to disclose or suggest all of the features as recited in claim 1 or corresponding method claim 24. Claims 2-11, 13-14, 17-23, 25, 27-34, and 37-44 are also distinguishable by virtue of their dependency from either independent claim 1 or 24, and for the additional features recited therein. Thus, it is respectfully requested that the rejection to claims 1-11, 13-14, 17-25, 27-34, and 37-44 be withdrawn.

Claims 12 and 36 - Teller/Tato/Khair

Claims 12 and 36 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over *Teller* in view of *Tato*, and further in view of *Khair et al.* (U.S. Patent Publication No. 2002/0109621, hereinafter *Khair*).

As discussed above, *Teller* or *Tato*, alone or in combination, fails to disclose or suggest all of the features as recited in independent claims 1 and 24, the independent claims from which the rejected claims depend. Further, *Khair* is not purported by the Office to overcome the noted deficiencies of *Teller* and *Tato*. Thus, it is respectfully requested that the rejection to claims 12 and 36 under 35 U.S.C. §103(a) be withdrawn.

Conclusion

Based on at least the foregoing amendments and remarks, Applicants submit that claims 1-14, 17-25, 27-34, and 36-44 are allowable, and that this application is in condition for allowance. Accordingly, Applicants request a favorable examination and consideration of the instant application. In the event the instant application can be placed in even better form, Applicants request that the undersigned attorney be contacted at the number below.

Respectfully submitted,

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